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WPNSSB

MU2JM-F

MULTIMETER, DIGITAL

1. GENERAL. This procurement requires a portable 4-1/2 digit multimeter.

2. CLASSIFICATION. Type II, Class 5, Style E, and Color R in accordance with MIL-T-28800 for shipboard applications.

3. MEASUREMENT CAPABILITIES. The equipment shall be capable of measuring ac and dc voltages, ac and dc current, and resistance within the minimum ranges and accuracies specified below.

3.1 Voltage measurements. Range: 200 mV to 1,000 Vdc and 750 Vac full scale. The meter shall be average responding and rms indicating in ac mode.

3.1.1 Voltage accuracy. AC and dc voltage measurement accuracies specified in Table I shall apply after a measurement (response) time not to exceed 1.5 seconds for ac and 1 second for dc.

TABLE I. Accuracies (15 to 35°C after 30 min. warm-up)

Function	Range	1 Year Accuracies ±(% input + No. of counts)
DC Volts	All	0.06 + 3
AC Volts (5% to 100% of range) (V x Hz less than 2 x 10E7)		
30 Hz - 50 Hz 50 Hz - 10 kHz 10 kHz - 50 kHz 50 kHz - 70 kHz 50 kHz - 70 kHz 50 Hz - 10 kHz	All except 750V All except 750V All except 750V 200 mV 2, 20, 200V 750V	0.8 + 30 0.3 + 20 0.8 + 30 0.8 + 100 1.5 + 15 0.5 + 8
DC Current	All Ranges	0.2 + 3
AC Current (5% to 100% of range)		

30 Hz - 50 Hz 50 Hz - 2 kHz 50 Hz - 10 kHz	All 2A All except 2A	1.0 + 30 1.2 + 20 1.0 + 20
Ohms	All	0.4 + 2

3.1.2 Voltage temperature coefficient. DC: ±(0.004% of reading + 0.001% of FS)/°C maximum. AC: ±(0.02% of reading + 0.005% of FS)/°C maximum.

3.1.3 Noise rejection. DC mode: 90 dB for CMR and 60 dB for NMR at 50 and 60 Hz. CMR is specified with a 1 kilohm unbalanced input.

3.1.4 Voltage function maximum input. All ac and dc voltage ranges: 1,000V and 2 x 10E7 volts x hertz in ac.

3.2 Current measurements. Range: 200 μA to 2A FS, ac and dc, in selectable ranges, with corresponding shunt values of 900, 90, 9, 0.9 and 0.1 ohms.

3.2.1 Current accuracy. The alternating and direct current measurement accuracy parameters specified in table I shall apply after a measurement (response) time not to exceed one second.

3.2.2 Current temperature coefficient. DC: ±(0.005% of reading + 0.001% of FS)/°C maximum. AC: ±(0.02% of reading + 0.005% of FS)/°C maximum.

3.2.3 Current function input protection. All alternating and direct current ranges: 2A. Protection above this current level shall be provided by a fuse or resettable circuit breaker.

3.3 Resistance measurement. Range: 200 ohms to 20 megohms full scale.

3.3.1 Resistance accuracy. The resistance measurement accuracy parameters specified in table I shall apply after a measurement (response) time not to exceed one second throughout selectable ranges below 20 megohms and four seconds throughout the 20 megohm range.

3.3.2 Resistance temperature coefficient. ±(0.1% of reading + 0.001% of FS)/°C maximum.

3.3.3 Open-circuit voltage. 5V maximum.

3.3.4 Current through the unknown resistance. 1 mA maximum.

3.3.5 Resistance function input protection. 250 Vdc or 250 Vrms.

3.4 Controls and displays.

3.4.1 Controls. The equipment shall be provided with manual selection for all ranges specified above and an internal battery status test or indication.

3.4.2 Displays. The equipment shall be provided with a digital readout and an indication of excess input level.

3.4.3 Automatic features. The equipment shall be provided with automatic ranging except in current functions, automatic polarity selection for all dc functions, and automatic zeroing for all functions.

3.5 Inputs.

3.5.1 Common input floating voltage level. 1,000V (dc + peak ac) referenced to case ground.

3.5.2 Input impedance. DC: 10 megohms. AC input RC: 10 megohms with no more than 100 pF shunt capacitance.

3.6 Test leads. Test leads that are designed for operator protection against hazardous potentials in accordance with MIL-T-28800 are required.

4. GENERAL REQUIREMENTS.

4.1 Power source. MIL-T-28800 nominal and dc internal power source requirements are invoked as detailed below.

4.1.1 Nominal power source. Maximum power consumption: 20W.

4.1.2 DC internal power source. Internal batteries and charger are required. Minimum operating time shall be 6 hours following a maximum recharge time of 16 hours.

4.2 Weight. 5 kg (11 lb) maximum.

4.3 Lithium batteries. Per MIL-T-28800, lithium batteries are prohibited without prior authorization. A request for approval for the use of lithium batteries, including those encapsulated in integrated circuits, shall be submitted to the procuring activity at the time of submission of proposals. Approval shall apply only to the specific model proposed.